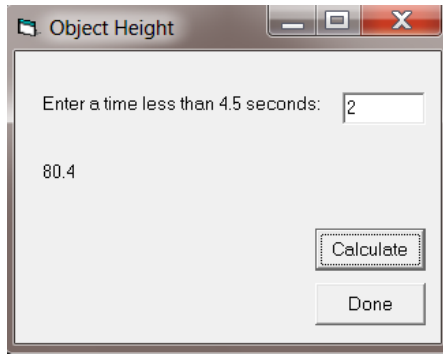


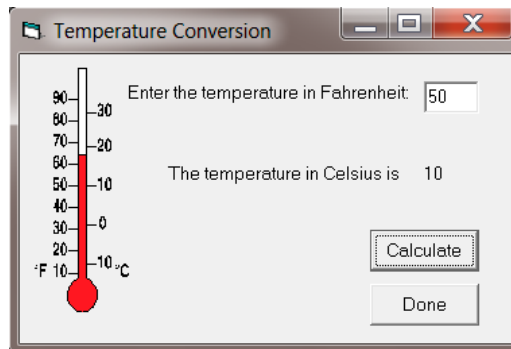
Chapter 3

Programs

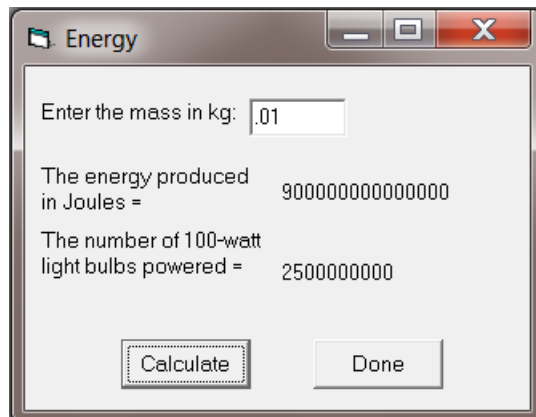
1. The height of an object at any given time dropped from a starting height of 100 meters is given by the equation $h=100 - 4.9*t^2$ where t is the time in seconds that is typed in the textbox. Create an Object Height application that asks the user for a time less than 4.5 seconds and displays the height of the object at that time. The application interface should look similar to the following:



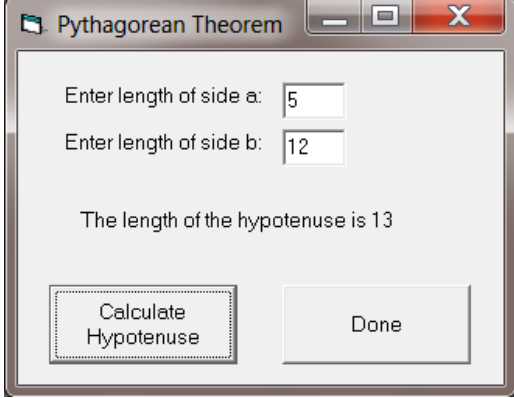
2. Create a Temperature Conversion application that asks the user for a temperature in Fahrenheit and displays the temperature in Celsius using the formula $C = 5/9 (F - 32)$. The application interface should display the thermometer graphic on the form. Test the program with values 212, 32, 98.6, and -40. The application interface should look similar to:



3. Einstein's famous formula, $e = m c^2$, gives the amount of energy released by the complete conversion of matter of mass m into energy e . If m represents the mass in kilograms and c represents the speed of light in meters per second ($3.0 \times 10^8 \text{ m/s}$), then the result is in the energy unit Joules. It takes 360000 Joules to light a 100-watt light bulb for an hour. Create an Energy application that allows the user to enter a mass in kg and displays the energy and the number of light bulbs that could be powered by a given quantity of matter. The application interface should look similar to the following:

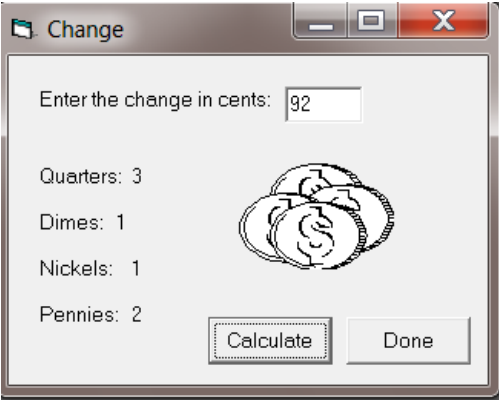


4. The Pythagorean Theorem states that $a^2 + b^2 = c^2$ where a and b are the length of two sides of a right triangle and c is the length of the side of the triangle opposite the right angle (the hypotenuse). Create a Pythagorean Theorem application that asks the user for the lengths of sides a and b, and then calculates the length of the hypotenuse. The application interface should look similar to:



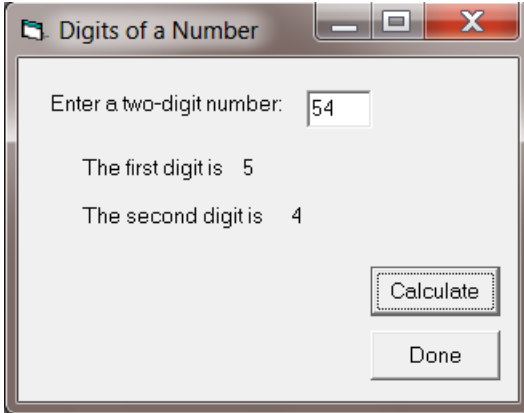
A screenshot of a Windows-style application window titled "Pythagorean Theorem". It features two input fields: "Enter length of side a:" with the value "5" and "Enter length of side b:" with the value "12". Below these, it displays "The length of the hypotenuse is 13". At the bottom, there are two buttons: "Calculate Hypotenuse" and "Done".

5. Create a Change application that displays the minimum number of coins necessary to make the change entered by the user. The change can be made up of quarters, dimes, nickels, and pennies. The application interface should display the Coins graphic on the form when the calculate button is clicked. The application interface should look similar to :



A screenshot of a Windows-style application window titled "Change". It has an input field "Enter the change in cents:" with the value "92". Below this, it lists the coin counts: "Quarters: 3", "Dimes: 1", "Nickels: 1", and "Pennies: 2". To the right of this list is a graphic of several coins. At the bottom, there are two buttons: "Calculate" and "Done".

6. Create a Digits of a Number application that accepts a two-digit number and displays the digits separately. The application interface should look similar to:



A screenshot of a Windows-style application window titled "Digits of a Number". It features an input field "Enter a two-digit number:" with the value "54". Below this, it displays "The first digit is 5" and "The second digit is 4". At the bottom right, there are two buttons: "Calculate" and "Done".

7. Create a School Information application that displays the city and state of a school depending on which option button is clicked. Include at least five of your favorite schools. The application interface should look similar to:

